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Arizona Corporation Commission
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FEB 01 2013

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February 1, 2013

Commissioner Gary Pierce
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007

RE: Arizona Public Service - 2012 Integrated Resource Planning
Docket No. E-00000A-11-0113

This letter and the responses attached as Exhibit A address your January 11, 2013 inquiry regarding integrated resource planning. Arizona Public Service ("APS") understands your concerns to be: (1) whether Arizona utilities have more generation reserves than needed, and (2) whether the aggregate system capacity factor indicates that the existing generation fleet is being efficiently used.

As you know, a reserve margin is the amount of additional generation resources above the maximum demand for a utility or a region. Different reserve margins are considered for long-term planning purposes and for short-term or real-time operations. Planning reserve margins must take into consideration the length of time needed to permit, site and develop a new generating unit or to acquire alternative resources. If a system has not adequately planned for generation or transmission, as occurred 10-years ago in California, it can result in major adverse impacts on customers. Also, because generating capacity is often added in relatively large increments whenever a new power plant is commissioned, reserve margins can show significant year-over-year change.

Reserve margin is not the only consideration when determining the generation resources needed to meet customer demand and maintain system reliability. A resource planner must also address whether the resource mix of a utility is efficiently designed to serve its customers' demand throughout the year. For example, a utility using its least efficient, but fastest ramping peaking units for 4,000 hours a year rather than only a few hundred hours, will ultimately cost more for customers than a utility that uses a more efficient combined cycle unit when the need arises. Adding a new combined cycle unit may temporarily increase the utility's reserve margin, but would still result in lower overall system cost.[1]

APS uses a common utility engineering analysis for establishing the minimum required level of planning reserves, which currently equates to 15%. However, there are many factors that can influence the actual level of reserves on a utility system. These factors include things such as abnormal weather, unplanned unit outages, the overall health of the economy, and varying levels of customer participation in mandated programs such as energy efficiency and distributed energy. These can cause reserve margins to substantially increase or decrease year to year.

[1] Conversely, resource additions or system performance could call for more flexible, fast ramping combustion turbines, which also could increase reserve margins in the near term, but are required to operate the system reliably.

The health of the economy and the recent economic recession have been perhaps the largest contributing factor impacting APS's current reserve margins. While the planned level of reserves on the APS system is at least 15% or roughly 1,000 MW, the reserve margin APS anticipates for 2013 is 28% or roughly 1,900 MW. APS's pre-recession forecast from 2007 anticipated a 2012 summer peak load that was approximately 1,400 MW higher than the actual customer demand. This deviation alone is higher than our currently planned reserve margin of roughly 1,000 MW. While APS's anticipated reserve margin for summer of 2013 is higher than traditionally planned, the types of resources making up those reserves are not all the same and each resource is different as to the value and contribution it provides toward meeting customer energy needs.

APS employs a diverse set of generation resources, sometimes classified as base load, intermediate and peaking resources to ensure it can efficiently meet system peak and maintain adequate reserves. Coal and nuclear generators operate as base load resources and are designed to run 24 hours a day, seven days a week, 52 weeks a year. Combined cycle gas units can also operate as base load units, but are more flexible than coal and nuclear units. APS typically uses combined cycle units to operate as intermediate units, meaning they are used to meet the energy requirements between base load and peak demand. They can be started and stopped on a daily or weekly basis if needed. Peaking resources are the most flexible generators and can start quickly, some in less than ten minutes. Peaking resources primarily operate in the summer during the afternoon peak demand periods, and are also essential in helping the system recover after unexpected outages. Peaking units will become increasingly important to manage intermittent generation in Arizona and to maintain reliability as wind, solar and energy efficiency increase.

APS reserves also take into consideration call options. Call options are the right to call on a counterparty to provide APS with capacity when requested the day ahead of the need. These give APS the right to access capacity with little notice. They are inexpensive to own, but relatively costly to exercise.[2] They are available should APS need them due to factors such as unplanned unit outages or abnormal weather. APS has 650 MW of call options. If these options were removed, APS's 2013 reserve margin would be reduced to 19% from 28%.

The APS reserve margin also takes into account full compliance with the Energy Efficiency and Renewable Energy Standards and growth in these programs impacts APS's reserve margins. Although these programs provide benefits to the system and can contribute to meeting load, they do not have the same operational value and reliability characteristics as other resources. For example, unlike traditional generation these resources are self-dispatching or dispatched by the customer, not necessarily when there is a system-wide need.

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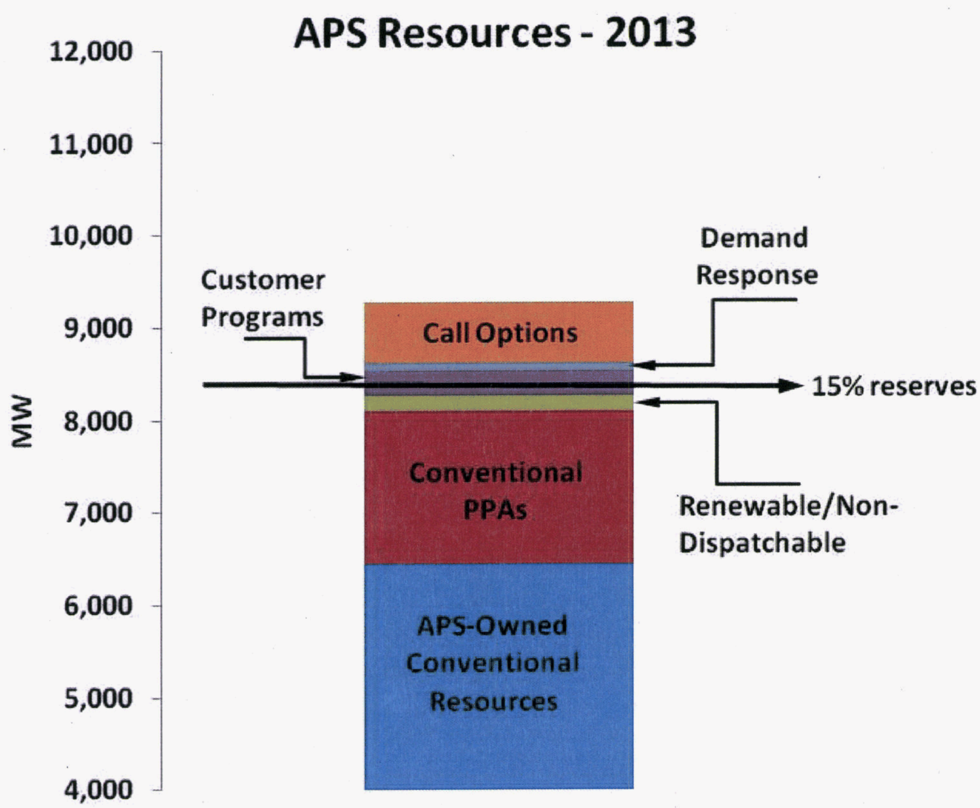
[2] These call options are essentially a safety net that do not have the operating flexibility of an APS-owned power plant or a traditional Purchased Power Agreement.

An illustration showing the resources that make up APS's total portfolio as described is shown below.



In years past, the types of generation resources used by utilities were able to be dispatched by the utility to meet changing load obligations. It is only within the last several years that intermittent resources, as well as customer programs that are dependent on customer participation, have been introduced into the resource planning process. Incorporating these diverse resources into the system has added new and complex considerations when planning for need and reliability. Additionally, in the past there was little uncertainty on the future viability of existing generating resources in a utility's portfolio. Today, uncertain future environmental regulations for coal generation puts at risk, more than ever before, an important base load resource for APS and our neighboring utilities.

APS is committed to meeting our customers future energy needs in a reliable manner and believes our reserve margin is reasonable under today's circumstances and that the current generation fleet is being used efficiently. As you are well aware, planning to meet future energy needs is a complex and dynamic process, and APS fully supports the Integrated Resource Planning process. When considering all the resources at our disposal, certainty that a resource will be available and dispatchable is a key factor when meeting customer needs and maintaining system reliability.

All of these issues are important and warrant continued discussion. APS welcomes the opportunity to discuss these issues with you and the Commission further.

If you have any questions regarding this information, please contact me at (602)250-4140.

Sincerely,

Jim Wilde
Director - Resource Planning

JW/cd
Attachments

cc: Docket Control
Parties of Record
Chairman Bob Stump
Commissioner Brenda Burns
Commissioner Robert L. Burns
Commissioner Susan Bitter Smith

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Exhibit A

ARIZONA CORPORATION COMMISSION
COMMISSIONER PIERCE FIRST SET OF DATA REQUESTS TO ARIZONA PUBLIC SERVICE COMPANY ("APS") REGARDING APS 2012 INTEGRATED RESOURCE PLAN
DOCKET NO. E-00000A-11-0113
JANUARY 11, 2013

Pierce 1.1: What is the existing reserve capacity for each load-serving entity, and how does that compare with the reserve capacity for that entity over the past twenty years?

Response: APS strives to maintain a planning reserve margin of no less than 15 percent. Actual reserves on an electrical system can vary due to a variety of factors including changes in customer demand due to economic recession, abnormal weather, unplanned generation unit outages, the amount of economic purchases and sales, and varying levels of participation in customer programs, including energy efficiency and renewable energy.

Over the past twenty years, as shown in APS15139, APS's reserve margin has ranged between 4 and 29 percent. These reserve margins are based on actual peak loads and planned system load serving capacity. As noted above, the volatility from one year to the next is a result of unusually high load growth as in 2005 to 2006 for example, or lumpy resource additions as in 2001 to 2002 with the addition of the 1,000 MW Redhawk Power Plant.

APS Reserve Margin

Pierce (1.1): Annual Reserve Capacity	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Annual Peak Load, MW[1]	3,678	4,101	4,294	4,384	4,456	4,950	4,797	5,324	5,687	5,490	5,969	6,018	6,573	7,220	7,127	7,026	7,218	6,936	7,087	7,207
Planning System Load Serving Capacity, MW	4,637	4,510	4,461	4,590	4,894	5,133	5,300	5,656	6,496	6,835	6,698	6,898	7,389	7,761	8,298	8,565	8,492	8,692	8,610	8,646
Reserve Capacity, MW	959	409	167	207	438	183	503	331	809	1,345	729	880	816	541	1,171	1,539	1,274	1,756	1,523	1,439
Reserve Margin, %[2]	29%	11%	4%	5.2%	11%	4%	12%	7%	16%	28%	14%	17%	14%	8%	18%	24%	19%	27%	23%	22%

Notes: (1) Reserve margin is calculated as (System Load Serving Capacity - Annual Peak Load) / (Annual Peak Load - Firm Purchases).

(2) This chart demonstrates the impacts of actual load only as compared to planned system load serving capacity. This reserve margin number is different than those included in historical IRP filings, which include additional adjustments for economy purchases and sales as well as forced outages and curtailments.

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Pierce 1.2: What are the load-serving entities' existing off-system sales and how do those sales compare with previous sales over the past twenty years?

Response: Off-system sales come about as an economic opportunity when the market price of power exceeds the cost of producing that power from the next available generating unit and that generating unit is not needed to serve native load customer demand. Margins from off-system sales reduce the rates that customers pay for fuel through the Power Supply Adjustor. The percentage of reserve margin is not a reflection of off-system sales.

APS's off system sales calculations are available back to 1999. Before that time, they were combined with other numbers and not broken out separately.

Please see the chart below.

APS Off-System Sales (MWH)

2012	3,264,059
2011	2,332,825
2010	2,741,586
2009	2,229,364
2008	2,008,468
2007	1,528,766
2006	1,919,342
2005	1,869,222
2004	2,717,709
2003	2,146,271
2002	1,791,319
2001	1,387,860
2000	1,494,299
1999	1,267,349

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Pierce 1.3: What is the outlook for off-system sales for each load-serving entity in the future?

Response: Once APS has met its responsibility to reliably serve its customers, then APS pursues economic opportunities for selling excess energy as discussed in response to Pierce 1.2. Based on the forecast using December 31, 2012 forward prices, APS is forecasting the following off-system sales:

APS Off-System Sales (MWH)		
Forecast	2017	3,547,686
Forecast	2016	3,636,705
Forecast	2015	3,550,121
Forecast	2014	3,131,953
Forecast	2013	2,152,527

In 2013, the implied market heat rate or the market price for power in relation to the cost of natural gas (spark spread) is forecast to be lower than in 2012, thus reducing the amount of projected off-system sales from the 2012 level.

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Pierce 1.4: What has been the aggregate capacity factor (actual load served divided by the system load serving capacity) for each load-serving entity over the last twenty years for the following:

a. at system peak load for the year,
b. at average load during the peak month,
c. at average annual load,
d. at average load during the lowest load month?

Response: Please see APS15140.

a. The "aggregate capacity factor" requested is based on actual peak load for each year and the planned load serving capability just prior to the subject summer peak season. This reflects APS owned generation and long term or seasonal power purchases and sales. It does not necessarily represent load serving capability at the actual time of peak as it has not been adjusted for unit forced outages and spot power purchases and sales that occur on a real time basis.
b. The "aggregate capacity factor" at average load during the peak month is calculated the same as in 1.4.a, except that it uses actual average load for the month rather than actual peak load.
c. The "aggregate capacity factor" at annual average load is based on actual average load for the year, and the average monthly load serving capability for the year. Load serving capability reflects seasonal capability of resources, such as summer purchases/winter sales, and planned maintenance of APS power plants. Data needed to calculate the average monthly load serving capability is not reasonably available prior to 1999, and is noted N/A.
d. The "aggregate capacity factor" at average load during the lowest load month is based on actual average load for the lowest load month, and the planned load serving capability for that month. Load serving capability reflects seasonal capability of resources, such as summer purchases/winter sales, and planned maintenance of APS power plants. Data needed to calculate the monthly load serving capability is not reasonably available prior to 1999, and is noted N/A.

APS Capacity Factor

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Pierce (1.4a): Aggregate Capacity Factor at System Peak Load for the Year										
Actual Peak Load Served, MW	3,678	4,101	4,294	4,384	4,456	4,950	4,797	5,324	5,687	5,490
System Load Serving Capacity, MW	4,637	4,510	4,461	4,590	4,894	5,133	5,300	5,656	6,496	6,835
Aggregate Capacity Factor	79%	91%	96%	96%	91%	96%	91%	94%	88%	80%
Pierce (1.4b): Aggregate Capacity Factor at Average Load During the Peak Month										
Actual Average Load Served, MW	2,739	2,645	2,998	3,315	3,393	3,564	3,552	3,816	3,896	3,894
System Load Serving Capacity, MW	4,637	4,510	4,461	4,590	4,894	5,133	5,300	5,656	6,496	6,835
Aggregate Capacity Factor	59%	59%	67%	72%	69%	69%	67%	67%	60%	57%
Pierce (1.4c): Aggregate Capacity Factor at Average Annual Load										
Actual Average Load Served, MW	2,174	2,274	2,323	2,476	2,602	2,668	2,711	2,867	2,978	2,884
System Load Serving Capacity, MW	N/A	N/A	N/A	N/A	N/A	N/A	4,280	4,367	4,950	5,281
Aggregate Capacity Factor	N/A	N/A	N/A	N/A	N/A	N/A	63%	66%	60%	55%
Pierce (1.4d): Aggregate Capacity Factor at Average Load During the Lowest Load Month										
Actual Average Load Served, MW	1,867	1,881	1,926	2,037	2,110	2,183	2,272	2,310	2,364	2,286
System Load Serving Capacity, MW	N/A	N/A	N/A	N/A	N/A	N/A	3520	3,450	4,080	4,893
Aggregate Capacity Factor	N/A	N/A	N/A	N/A	N/A	N/A	65%	67%	58%	47%

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Pierce (1.4a): Aggregate Capacity Factor at System Peak Load for the Year										
Actual Peak Load Served, MW	5,969	6,018	6,573	7,220	7,127	7,026	7,218	6,936	7,087	7,207
System Load Serving Capacity, MW	6,698	6,898	7,389	7,761	8,248	8,470	8,303	8,692	8,610	8,646
Aggregate Capacity Factor	89%	87%	89%	93%	86%	83%	87%	80%	82%	83%
Pierce (1.4b): Aggregate Capacity Factor at Average Load During the Peak Month										
Actual Average Load Served, MW	4,212	4,044	4,680	4,887	5,037	4,808	5,034	4,793	5,076	4,771
System Load Serving Capacity, MW	6,698	6,898	7,389	7,761	8,248	8,470	8,303	8,692	8,610	8,646
Aggregate Capacity Factor	63%	59%	63%	63%	61%	57%	61%	55%	59%	55%
Pierce (1.4c): Aggregate Capacity Factor at Average Annual Load										
Actual Average Load Served, MW	3,041	3,156	3,306	3,469	3,662	3,601	3,557	3,465	3,553	3,518
System Load Serving Capacity, MW	5,280	5,233	6,320	6,470	6,845	7,149	7,040	7,124	6,726	6,926
Aggregate Capacity Factor	58%	60%	52%	54%	53%	50%	51%	49%	53%	51%
Pierce (1.4d): Aggregate Capacity Factor at Average Load During the Lowest Load Month										
Actual Average Load Served, MW	2,433	2,721	2,600	2,744	2,945	2,898	2,864	2,797	2,745	2,844
System Load Serving Capacity, MW	5,040	3,904	5,224	5,934	5,963	5,897	6,363	6,095	5,537	4,971
Aggregate Capacity Factor	48%	70%	50%	46%	49%	49%	45%	46%	50%	57%

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Pierce 1.5: Are there reasons to believe that maintaining and even increasing the existing excess reserve capacity in the short-term will mitigate rate increases in the future when an eventual economic recovery will inevitably increase electric demand?

Response: The purpose of the reserve margin is to ensure system reliability. APS believes that reserve margin should only be one metric considered when making resource decisions. Reducing reserve margin will not necessarily mitigate rate increases. As described in the cover letter and in response to Pierce 1.1, a variety of factors influence the reserve margin and the decisions on how and when resources are added to meet demand. And for the reasons expressed in the cover letter, reserves beyond the 15 percent minimum do not necessarily show either an efficient or inefficient generation portfolio.